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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/004,142 | 11/14/2001 | Georg Ockenfuss | 102.01 | 8535 |

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| EXAMINER | |
|---|---|
| LAVARIAS, ARNEL C | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2872 | |

DATE MAILED: 07/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/004,142 | OCKENFUSS ET AL. | |
| | Examiner | Art Unit | |
| | Arnel C. Lavarias | 2872 | |

*-- Th MAILING DATE of this communication appears on th cover sheet with the correspondenc address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *2/13/02, 11/14/02, 3/4/03, 5/20/03* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-10,12-15,22-26 and 29-32* is/are pending in the application.

4a) Of the above claim(s) *1-10 and 12-15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-26 and 29-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 November 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2,3,5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Group II in Paper No. 6, dated 3/4/03, and more specifically Group IIA2 in Paper No. 8, dated 5/20/03, is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 1-10, 12-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 6, dated 3/4/03, and Paper No. 8, dated 5/20/03.

3. Examiner notes that Applicant has elected Claims 22-26, 29-32, i.e. Group IIA2, in Paper No. 8, dated 5/20/03. It is noted that Group IIA2 in Paper No. 7, dated 4/22/03 (See Section 3) was improperly described. The description for Group IIA1 in Section 3 of Paper No. 8 should appear for Group IIA2, and vice versa. However, it is clear from the Applicants' election that the apparatus claims drawn to the optical filter are to be examined.

### *Drawings*

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

✓Figure 4- Reference numerals 41, 42, 43.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Specification***

5. The disclosure is objected to because of the following informalities:

Page 2, line 12- 'waveguidesdue' should read 'waveguides due'

Page 2, line 14- insert 'in' after 'decrease'

Page 3, line 23- '(40)' should read '(4)

Page 4, line 26- 'may' should read 'May'

Page 9, line 4- insert 'film' after 'as a thin'

Page 12, line 5- 'material We' should read 'material. We'

Page 14, line 14- 'grin' should read 'GRIN'

Page 14, line 24- '5,5,485,540' should read '5,485,540'

Page 15, line 23- insert 'to' after 'coefficient'

Page 17, line 1- 'ca' should read 'can'

Page 17, line 2- 'functional' should read 'functionally'

Page 17, line 6- 'fresnel' should read 'Fresnel'.

Appropriate correction is required.

### *Claim Objections*

6. Claim 22 is objected to because of the following informalities:

✓Claim 22, lines 6, 8, and 10- 'multi-layer', 'multiplayer' should read 'multilayer'.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. ✓ Claims 22-26, 29-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding Claim 22, lines 6-7 recites the limitation 'the multilayer interference filter having a second coefficient of thermal expansion larger than the first coefficient of thermal expansion...'. However, the specification of the disclosure fails to recite such a limitation. Instead, the specification discloses that the coefficient of thermal expansion of the multilayer interference filter being less than the coefficient of thermal expansion of the frame member (See Page 13, line 25-Page 16, line 5). The recited limitation in Claim 22 cannot perform the required temperature compensation since the temperature compensation relies upon the frame member stretching the multilayer interference filter,

and this cannot happen if the multilayer interference filter has a thermal expansion coefficient that is greater than that of the framing member. For the purposes of examination, the Examiner has taken the above limitation to mean 'the multilayer interference filter having a second coefficient of thermal expansion *smaller* than the first coefficient of thermal expansion...'.

Claims 23-26, 29-32 are dependent on Claim 22, and hence inherit the deficiencies of Claim 22.

***Double Patenting***

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 22, 29-30, and 32, as best understood, are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1, 2, and 4 of U.S. Patent No. 6469847 to Fan et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because Fan et al. similarly discloses a first metal (See Claim 2) frame member having a first planar surface that

substantially surrounds a central opening (See Claims 1 and 4), the first frame member having a first coefficient of thermal expansion (Claim 1, lines 12-15; Claim 4); a multilayer interference filter free of any substrate having a first surface attached to the planar surface of the first frame member to define an unobstructed optical aperture, the multilayer interference filter having a second coefficient of thermal expansion smaller than the first coefficient of thermal expansion (Claim 1, lines 2-11), whereby the frame member applies stress to the multilayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multilayer interference filter (Claim 1, lines 16-25). Fan et al. additionally discloses the first frame member formed from a material having a coefficient of thermal expansion of at least $140 \cdot 10^{-7}/K$ (See Claim 3). The Examiner notes that with regard to Claim 22, lines 6-7 recites the limitation 'the multilayer interference filter having a second coefficient of thermal expansion larger than the first coefficient of thermal expansion...'. However, the specification of the disclosure fails to recite such a limitation. Instead, the specification discloses that the coefficient of thermal expansion of the multilayer interference filter being less than the coefficient of thermal expansion of the frame member (See Page 13, line 25-Page 16, line 5). The recited limitation in Claim 22 cannot perform the required temperature compensation since the temperature compensation relies upon the frame member stretching the multilayer interference filter, and this cannot happen if the multilayer interference filter has a thermal expansion coefficient that is greater than that of the framing member. For the purposes of examination, the Examiner has taken the

above limitation to mean 'the multilayer interference filter having a second coefficient of thermal expansion *smaller* than the first coefficient of thermal expansion...'.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 22, 29-30, and 32, as best understood, are rejected under 35 U.S.C. 102(e) as being anticipated by Fan et al.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Fan et al. discloses a first metal (See Claim 2) frame member having a first planar surface that substantially surrounds a central opening (See Claims 1 and 4), the first frame member having a first coefficient of thermal expansion (Claim 1, lines 12-15; Claim 4); a multilayer interference filter free of any substrate having a first surface

attached to the planar surface of the first frame member to define an unobstructed optical aperture, the multilayer interference filter having a second coefficient of thermal expansion smaller than the first coefficient of thermal expansion (Claim 1, lines 2-11), whereby the frame member applies stress to the multilayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multilayer interference filter (Claim 1, lines 16-25). Fan et al. additionally discloses the first frame member formed from a material having a coefficient of thermal expansion of at least $140 \cdot 10^{-7}$/K (See Claim 3).

13. Claims 22, 29-30, and 32, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Chung (U.S. Patent No. 5212584).

Chung discloses a first metal (See 54 or 52 in Figure 3) frame member having a first planar surface that substantially surrounds a central opening (See 54 or 52 in Figure 3), the first frame member having a first coefficient of thermal expansion (See col. 5, lines 14-29; inherently, copper has a thermal expansion of about $165 \cdot 10^{-7}$/K); a multilayer interference filter free of any substrate having a first surface attached to the planar surface of the first frame member to define an unobstructed optical aperture (See 40 in Figure 2; 50 in Figure 3; 70 in Figure 7; col. 4, line 64-col. 5, line 13), the multilayer interference filter having a second coefficient of thermal expansion smaller than the first coefficient of thermal expansion (The thermal expansion of the silicon/silicon dioxide film will inherently lie between $5 \cdot 10^{-7}$/K and $260 \cdot 10^{-7}$/K), whereby the frame member applies stress to the multilayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multilayer interference filter. Fan et

al. additionally discloses the first frame member formed from a material having a coefficient of thermal expansion of at least $140 \cdot 10^{-7}/K$ (See col. 5, lines 14-29; inherently, copper has a thermal expansion of about $165 \cdot 10^{-7}/K$).

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claim 31, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Chung.

Chung discloses the invention as set forth above in Claim 22, except for the first frame member being comprised of stainless steel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first frame member be comprised of stainless steel, since it has been held to be within the ordinary skill of worker in the art to select a known material on the basis of its suitability for the intended use. One would have been motivated to have the first frame member be comprised of stainless steel for the purpose of providing strength and rigidity to the filter assembly. Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945).

16. Claims 22-26, 29-32, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirasaki (U.S. Patent No. 5982488) in view of Chung.

With regard to Claims 22-24, 26, 29, and 32, Shirasaki discloses a first (See 501, 505 in Figure 6(A)) frame member having a first planar surface that substantially surrounds a central annular opening (See 505 in Figure 6(A); Figure 6(B); col. 10, lines 7-33), the first frame member having a first coefficient of thermal expansion (See col. 10, lines 7-16); an etalon filter free of any substrate having a first surface attached to the planar surface of the first frame member to define an unobstructed optical aperture (See 201, 202 in Figure 6(A)), the multilayer interference filter having a second coefficient of thermal expansion smaller than the first coefficient of thermal expansion (See col. 10, lines 7-16), whereby the frame member applies stress to the multilayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multilayer interference filter (See col. 5, line 32-col. 8, line 20). Shirasaki additionally discloses a second frame member (See 501, 504 in Figure 6(A)) with a central annular opening therethrough attached to a second surface of the multilayer interference filter, wherein the optical aperture through the multilayer interference filter is substantially unobstructed. Shirasaki additionally discloses the first and second frame members formed from a material having a coefficient of thermal expansion of at least $140 \cdot 10^{-7}/K$ (See col. 7, lines 18-42). Shirasaki lacks one or both of the mirror reflectors of the etalon filter being comprised of multilayer interference filters. However, it is extremely well known in the art of thin dielectric film filters to utilize multilayer interference filters as highly reflecting mirrors in tunable, temperature compensated etalon filters. In particular, Chung teaches the use of multilayer interference filters as highly reflecting mirrors in tunable, temperature compensated etalon filters (See 12, 24 in

Figure 1; 44, 46 in Figure 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have one or both of the mirror reflectors of the etalon filter being comprised of multilayer interference filters, as taught by Chung, in the optical filter assembly of Shirasaki, for the purpose of providing highly reflecting mirrors that operate over specific wavelength ranges, as well as reduce losses due to absorption when thin metal films are used as the mirror reflectors.

Additionally, with respect to Claims 25, 30-31, Shirasaki in view of Chung discloses the invention as set forth above in Claims 22-23, except for the first and second frame members being made of stainless steel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first and second frame members be comprised of stainless steel, since it has been held to be within the ordinary skill of worker in the art to select a known material on the basis of its suitability for the intended use. One would have been motivated to have the first and second frame members be comprised of stainless steel for the purpose of providing strength and rigidity to the filter assembly. Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945).

***Conclusion***

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5416867 to Thorsten et al.

Thorsten et al. is being cited to evidence the routine use of steel as a material for rigidly holding optical components in temperature-compensation type optical systems (See for example Figure 1; col. 5, line 4-col. 6, line 55).

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Arnel C. Lavarias
July 1, 2003

Thong Nguyen
Primary Examiner